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10/667,522	09/23/2003	David A. Jackson	66396-057	2568

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EXAMINER
COHEN, AMY R

ART UNIT	PAPER NUMBER
2859	

DATE MAILED: 06/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

8/L

Office Action Summary	Application No.	Applicant(s)	
	10/667,522	JACKSON ET AL.	
	Examiner	Art Unit	
	Amy R. Cohen	2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 12-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 12-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 November 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 14 objected to because of the following informalities:

Claim 14 is objected to since it implies a plurality of target objects and target object indicators, making the relationship of the target object indicator and target object unclear.

Claim 14, line 3, there are two periods at the end of the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-9, 12, 17-25, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hendrix (U. S. Patent No. 6,115,927) in view of Jackson (U. S. Patent No. 5,724,743) and in view of Liss et al. (U. S. Patent No. 4,614,866).

Regarding claim 1-9, 12, 29: Hendrix discloses a three-dimensional camera based position determining system, comprising: at least one camera and light subsystem (16, 12), each subsystem having: an image sensing device (16) configured to generate image information (Col 4, lines 46-54, Col 7, lines 12-28); and at least one invisible light emitting diode (14) operative coupled to a strobe circuit, the at least one diode and circuit being configured to emit strobed invisible light that is directed to the image sensing device and the image sensing device detects

and forms an image (Col 5, lines 1-13); a data processing device (20) operative coupled to the image sensing device, the data processing device being configured to determine the orientation of an object based on the generated image (Col 10, lines 6-65); and a visible indicator (22) that indicates whether the at least one invisible diode is operative (Col 10, lines 6-65).

Hendrix discloses the position determination system wherein the invisible light is infrared light (Col 5, lines 5-13).

Hendrix discloses the position determination system wherein the at least one invisible light emitting diode is an array of light emitting diodes (Col 4, lines 46-54, Col 5, lines 32-44).

Hendrix discloses the position determination system wherein the image sensing device is a charge-coupled device video camera (Col 7, lines 12-28).

Hendrix discloses the position determination system comprising a current source configured to supply a current to the at least one invisible light emitting diode (Col 4, line 46-Col 5, line 13).

Hendrix does not disclose the position determination system comprising: an optically scannable target fixedly attached to a target object; wherein the image sensing device is configured to view the optically scannable target device and to generate image information indicative of the geometric characteristics of the target device; wherein strobed invisible light illuminates the optically scannable target such that the light is retro-reflected to the image sensing device; the data processing device being configured to determine the orientation of the target object based on the generated target image; and a visible indicator that conclusively indicates whether the at least one invisible light emitting diode is operative; wherein the visible indicator emits light within the visible spectrum, and thereby indicates that the at least one

invisible light emitting diode is operative; wherein the number of invisible light emitting diodes in the array is sixty-four; wherein the number of invisible light emitting diodes in the array is eighty; wherein the target object is a vehicle wheel, and the data processing device is further configured to determine proper wheel alignment based on orientation of the vehicle wheel; wherein the image sensing device includes an electronic shutter that is synchronized with the at least one strobed light emitting diode such that an image is captured only when a target is illuminated.

Jackson discloses a three-dimensional camera based position determination system (Fig. 2 and 110), comprising: an optically scannable target (126) device fixedly attached to a target object (112-115); at least one camera and light subsystem (122), each subsystem having: an image sensing device configured to view the optically scannable target device and to generate image information indicative of geometric characteristics of the target device (148); and at least one light emitting diode (142) operatively coupled to a strobe circuit (Col 7, lines 45-50), the at least one diode and circuit being configured to emit strobed light thereby illuminating the optically scannable target such that the light is retro-reflected to the image sensing device and the image sensing device detects and forms an image of the target (Col 7, lines 15-50 and Col 20, line 25-Col 21, line 30); and a data processing device (32, 34, 36, Fig. 2) operatively coupled to the image sensing device, the data processing device being configured to determine the orientation of the target object based on the generated target image; and a visible indicator (119, the image on the display of the computer is a visible indicator that indicates whether the light emitting diode(s) is/are operative since if they are operative, an image will be obtained) that emits light within the visible spectrum, thereby indicating that the at least one light emitting

diode is operative (the image on the display of the computer is a visible indicator that indicates whether the light emitting diode(s) is/are operative); wherein the at least one light emitting diode is an array of light emitting diodes (Col 21, lines 1-15); wherein the number of light emitting diodes in the array is sixty-four (Col 21, lines 1-15); wherein the target object is a vehicle wheel (112-115), and the data processing device is further configured to determine proper wheel alignment based on orientation of the vehicle wheel (Abstract); wherein the image sensing device includes an electronic shutter that is synchronized with the at least one strobed light emitting diode such that an image is captured only when a target is illuminated (Col 7, lines 15-50).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include an optically scannable target, to have the wherein the image sensing device configured to view the optically scannable target device and to generate image information indicative of the geometric characteristics of the target device and to have the strobed invisible light illuminate the optically scannable target such that the light is retro-reflected to the image sensing device to the device of Hendrix, as taught by Jackson, so that the optically scannable target could be moved about the target object instead of moving a probe which includes light emitters, keeping the light emitters in a more stable position and thereby protecting the emitters from excessive movement or possible dropping by a user which could break or render the emitters inoperative.

Liss et al. discloses a visible indicator that conclusively indicates whether at least one invisible light emitting diode is operative (Col 1, line 59-Col 2, line 6, Col 2, lines 50-60, Col 4, lines 12-35); wherein the visible indicator emits light within the visible spectrum (68), and

thereby indicates that the at least one invisible light emitting diode is operative (Col 1, line 59-Col 2, line 6, Col 2, lines 50-60, Col 4, lines 12-35); wherein the visible indicator is disposed in the camera and light subsystem (Abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a conclusive indicator indicating whether the at least one invisible light emitting diode is operative to the device of Hendrix and Jackson, as taught by Liss et al., in order for the operator to conclusively and immediately determine that the device is operative, increasing the usefulness of the device for operators of varying levels of proficiency in the use of the device (Liss et al., Col 1, line 59-Col 2, line 25).

Regarding the number of invisible light emitting diodes in the array being eighty (claim 6): Hendrix, Jackson and Liss et al. disclose a position determining system where the number of invisible light emitting diodes in the array is sixty-four. However, to choose a value for the number of diodes in the array to be eighty, absent any criticality, is only considered to be the "optimum" value of the number of diodes in the array, as stated above, that a person having ordinary skill in the art would have been able to determine using routine experimentation based, among other things, on the desired accuracy and since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. See ***In re Boesch***, 205 USPQ 215 (CCPA 1980). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the number of invisible light emitting diodes in the array of Hendrix, Jackson and Liss et al. to have eighty invisible light emitting diodes in order to have more diodes in the array, increasing the accuracy of the array and hence, the accuracy of the position determining system.

Regarding claims 17-25: Since Claims 17-22, 24 are means-plus-function claims comparable to claims 1-9, 12 above, the rejection of claims 17-22, 24 are regarded to be the same as the rejection for claims 1-9, 12 above. Regarding the directional means for indicating the direction in which a target object should be repositioned, and for indicating that a target object has been properly positioned; and a target object indicator means for indicating the state of target acquisition by the data processing device (claims 23 and 25): Hendrix discloses a directional means (22) for indicating the direction in which a target object should be repositioned, and for indicating that a target object has been properly positioned (Col 9, line 60-Col 10, line 65, Col 11, lines 52-67); and a target object indicator means (22) for indicating the state of target acquisition by the data processing device (Col 4, line 46-Col 5, line 5, Col 8, lines 25-43, Col 9, line 60-Col 10, line 18).

4. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hendrix, Jackson and Liss et al. as applied to claims 1-9, 12, 17-25, 29 above, and further in view of Stam et al. (U. S. Patent No. 5,923,027).

Hendrix, Jackson and Liss et al. disclose the position determining system as described above in paragraph 3.

Hendrix, Jackson and Liss et al. do not disclose a position determining system wherein the image sensing device is a complimentary metal oxide semiconductor camera.

Stam et al. discloses an image sensing device, which is a complimentary metal oxide semiconductor camera (Col 5, lines 45-58).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the image sensing device of Hendrix, Jackson and Liss et al. to be a

complimentary metal oxide semiconductor camera, as taught by Stam et al., since the complimentary metal oxide semiconductor camera is both economical and highly sensitive and therefore, more cost effective and accurate (Stam et al., Col 5, lines 45-58).

5. Claim 13-16, 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hodge (U. S. Patent No. 5,760,938) in view of Hendrix.

Regarding claims 13-16, 28: Hodge discloses a three-dimensional position determination system, comprising: an optically scannable target device (45) fixedly attached to a target object (41); at least one sensor and light subsystem (Figs. 1-4), each subsystem having: an image sensing device (8, 9, 13, 29) configured to view the optically scannable target device and to generate image information indicative of geometric characteristics of the target device (Col 3, lines 51-64, Col 7, lines 49-64); and at least one light emitting diode being configured to emit light thereby illuminating the optically scannable target such that the light is retro-reflected to the image sensing device and the image sensing device forms an image of the target (Figs. 1-4, Col 7, lines 37-45); a data processing device operatively coupled to the image sensing device, the data processing device being configured to determine the orientation of the target object based on the generated target image (Col 3, lines 51-64, Col 7, lines 49-64); and a target object indicator (38), disposed on the sensor and light subsystem, configured to display the status of target acquisition by the data processing device (Col 3, lines 51-64, Col 7, lines 25-36, and lines 49-64).

Hodge discloses the position determination system wherein the target object indicator is configured to provide an indication for each target object (Fig. 4); wherein the target object is a vehicle (Fig. 4).

Hodge does not disclose the three-dimensional position determination system wherein the image sensing device is a camera (though this is not specifically claimed, Examiner interprets the image sensing device as claimed to be a camera since "at least one camera and light system" includes an image sensing device and a light); wherein the at least one diode is operatively coupled to a strobe circuit; wherein the target object indicator is configured to display the status of target acquisition by the data processing device, wherein the status of target acquisition indicates whether an obtained image of the scannable target is acceptable; comprising a directional indicator for indicating a manner by which the target object should be manipulated; wherein the directional indicator indicates whether the vehicle should be moved forward or backward, or whether a wheel of the vehicle should be steered right or left.

Hendrix discloses a three-dimensional position determination system wherein the image sensing device is a camera (16); wherein the at least one diode (14) is operatively coupled to a strobe circuit (Col 5, lines 5-13); wherein the target object indicator is configured to display the status of target acquisition by the data processing device, wherein the status of target acquisition indicates whether an obtained image of the scannable target is acceptable (Col 9, line 60-Col 10, line 18); comprising a directional indicator for indicating a manner by which the target object should be manipulated (Col 10, lines 6-65); wherein the directional indicator indicates whether the vehicle should be moved forward or backward, or whether a wheel of the vehicle should be steered right or left (Col 10, lines 6-65).

It would have been obvious to one off ordinary skill in the art at the time the invention was made to have the position determination device of Hodge include a camera and diode system wherein the status of the target acquisition is indicated on the display, as taught by Hendrix, in

order to produce a more accurate reading of the position of the target using the camera and diode system and to identify the status of the target, so that a user would be able quickly to identify if the system were in proper alignment and what needed to be done to ensure proper alignment, which both improves accuracy and the speed at which a user works (Hendrix, Col 10, lines 6-18).

Regarding claims 26 and 27: Hodge discloses an image-based position determination system for optically scanning a target (45) device related to an object, the system comprising: at least one sensor and light subsystem (Figs. 1-4), each subsystem having: an image sensing device (8, 9, 13, 29) configured to view the target device and to generate image information indicative of geometric characteristics of the target device (Col 3, lines 51-64, Col 7, lines 49-64); at least one light emitting diode being to emit light thereby illuminating the target device such that the light is retro-reflected to the image sensing device and the image sensing device detects and forms an image of the target (Figs. 1-4, Col 7, lines 37-45); and a visual indicator (38) for indicating a manner by which the object should be manipulated such that the image sensing device obtains an image of the target device in a different position (Col 3, lines 51-64, Col 7, lines 25-36, Fig. 8, all of the sensor outputs that are measured, will give an indication, based on the output, the manner by which the object should be manipulated to get an output in a different direction, a better alignment position); and a data processing device configured to couple to the visual indicator and the image sensing device to determine the orientation of the object based on the generated target image (Col 3, lines 51-64, Col 7, lines 25-36, lines 49-64).

Hodge does not disclose the image-based position determination system wherein the image sensing device is a camera (though this is not specifically claimed, Examiner interprets the

image sensing device as claimed to be a camera since "at least one camera and light system" includes an image sensing device and a light); wherein the at least one diode is operatively coupled to a strobe circuit.

Hendrix discloses an image-based position determination system wherein the image sensing device is a camera (16); wherein the at least one diode (14) is operatively coupled to a strobe circuit (Col 5, lines 5-13); a visual indicator (22) for indicating a manner by which the object should be manipulated such that the image sensing device obtains an image of the target device in a different position (Col 9, line 60-Col 10, line 65); and a data processing device configured to couple to the visual indicator and the image sensing device to determine the orientation of the object based on the generated target image (Col 9, line 60-Col 10, line 65).

It would have been obvious to one off ordinary skill in the art at the time the invention was made to have the position determination device of Hodge include a camera and diode system, as taught by Hendrix, in order to produce a more accurate reading of the position of the target using the camera and diode system, so that a user would be able quickly to identify if the system were in proper alignment and what needed to be done to ensure proper alignment, which both improves accuracy and the speed at which a user works (Hendrix, Col 10, lines 6-18).

Response to Arguments

6. Applicant's arguments with respect to claims 1-10, 12, 17-26 have been considered but are moot in view of the new ground(s) of rejection.

7. Upon further consideration, claims 13-16, 27, and 28 have been newly rejected and the allowability of these claims has been withdrawn. Please see the above paragraph 5 for the rejection of these claims over Hodge in view of Hendrix.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents disclose position determination systems or status indicators Kling, III et al. (U. S. Patent No. 6,950,775), Murray (U. S. Patent No. 6,823,601), Jackson et al. (U. S. Patent No. 5,969,246), Heggli (U. S. Patent No. 5,136,280), Kruszewski (U. S. Patent No. 5,122,661), Thorne et al. (U. S. Patent No. 4,898,464), Grossman et al. (U. S. Patent No. 4,381,548), Fortescue (U. S. Patent No. 4,288,161), Pokrandt (U. S. Patent No. 4,121,122), and Meihofer (U. S. Patent No. 3,906,232).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy R. Cohen whose telephone number is (571) 272-2238. The examiner can normally be reached on 8 am - 5 pm, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F. Gutierrez can be reached on (571) 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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